

10/2/17

"Quality is not an act, it is a habit." -Aristotle

HW: "Rationalizing a Denominator" worksheet #3-15 odd
Test 2 on Monday 10/16

AIM: How do we Rationalize a Denominator?

Warm Up:

1) Simplify the following: $\frac{\sqrt{48} + \sqrt{3}}{\sqrt{3}}$

$$\frac{1}{3} + \frac{5}{3} = \frac{1+5}{3}$$

$$\frac{\sqrt{48}}{\sqrt{3}} + \frac{\sqrt{3}}{\sqrt{3}}$$

↓

$$\sqrt{16} + \sqrt{1}$$

$$4 + 1 = 5$$

2) $\frac{5}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{\cancel{5}\sqrt{10}}{\cancel{10}_2}$ Simplifying does not change the original value, it changes its appearance

$\sqrt{10} \cdot \sqrt{10} = \sqrt{100} = 10$

$\frac{1\sqrt{10}}{2} = \frac{\sqrt{10}}{2}$

3) $\frac{4}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\cancel{4}^2\sqrt{3}}{\cancel{6}_3} = \frac{2\sqrt{3}}{3}$

$2\sqrt{3} \cdot \sqrt{3} = 2\sqrt{9} = 2 \cdot 3 = 6$

Alt. $\frac{\cancel{4}^2}{\cancel{2}_1\sqrt{3}} = \frac{2}{1\sqrt{3}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

4) $\frac{1}{5-\sqrt{2}}$

⊗ Rationalizing is the process of changing an irrational (radical) to a rational

Most times we rationalize denominators.

HW check:

*27) $\frac{\sqrt[4]{c^6}}{\sqrt[5]{c^5}} = \frac{\cancel{c} \sqrt[4]{c^2}}{\cancel{c}} = \boxed{\sqrt[4]{c^2}}$

Diagram showing the prime factorization of $\sqrt[4]{c^6}$:

$$\sqrt[4]{c^6} = \sqrt[4]{c^4 \cdot c^2} = \sqrt[4]{c^4} \cdot \sqrt[4]{c^2} = c \sqrt[4]{c^2}$$

6) $\sqrt{50a^3} \div \sqrt{5a}$

1 $\frac{\sqrt{50a^3}}{\sqrt{5a}} = \frac{\sqrt{10a^2}}{1} = \sqrt{10a^2}$

Diagram showing the prime factorization of $\sqrt{10a^2}$:

$$\sqrt{10a^2} = \sqrt{a^2} \sqrt{10} = a\sqrt{10}$$

$a\sqrt{10}$